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EXAMINER

TRAN, BINH Q

ART UNIT PAPER NUMBER

3748

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/516,442

Applicant(s)

RASMUSSEN, NIELS BJARNE  
KAMMP

Examiner

BINH Q. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 51-101 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 51-71, 73-89 and 92-101 is/are rejected.
- 7) ☒ Claim(s) 72, 90-91 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/30/04; 04/29/05</u> | 6) <input type="checkbox"/> Other: ____  |

### DETAILED ACTION

Receipt and entry of Applicant's Preliminary Amendment dated July 22, 2005 is acknowledged.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 51-101 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically,

In claims 51 and 55, lines 2, the phase “*such as*” renders the claim indefinite since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired.

In claim 51-52, 77-78, 85, 90, and 101, the use of alternative expression “*and/or*” renders the claims indefinite because the expressions on either side of the “*and/or*” are not considered equivalent and cause uncertainty with respect to the scope of the claims.

In claim 100, line 1, “*wherein disposed*” is unclear.

The claims not specifically mentioned are indefinite since they depended from one of the above claims.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

***Claims 51-61, 63-71, 73-89, and 93-101 are rejected under 35 U.S.C. 102 (b) as being anticipated by Anderson et al. (Anderson) (Patent Number WO 96/21093).***

Regarding claims 51 and 55, Anderson discloses an apparatus and method for treatment of a fluid quantity including chemical reacting means such as combustible materials above a certain minimum quantity, said device comprising: a container (e.g. 10, 112) including at least one inlet (e.g. 14, 114) and outlet (e.g. 16, 116) for said fluid quantity; said container further comprises at least three passage sections (e.g. 18, 34, 32, 118a, 118b, 132a, 132b) being mutually connected, where at least one section (e.g. 18, 34, 32, 118a, 118b, 132a, 132b) of said passage

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sections includes catalytic material of one or more kinds; wherein the positioning of said passage sections forms at least one internal heat exchanger (e.g. 18, 34, 32, 118a, 118b, 132a, 132b) with mutual heat exchange (e.g. 18a, 18b, 118a, 118b) between the sections; wherein the at least three passage sections include a main reaction (e.g. 18a, 18b, 118a, 118b) passage section which heat exchanges in counterflow with a main heat transfer passage section of said at least three passage sections; and wherein at least one of said at least three passage sections comprises a plurality of substantially parallel pipes (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 56, Anderson further discloses that the catalytic device comprises exactly three passage sections (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 57, Anderson further discloses that the at least three sections comprises one or more inlet passage sections positioned above, alongside or outside said main reaction passage section (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 58, Anderson further discloses that the at least three sections comprises one or more outlet passage sections positioned above, alongside or outside said main reaction passage section (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 59, Anderson further discloses that the main reaction passage section is positioned above, alongside or outside said main heat transfer passage section (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 60, Anderson further discloses that wherein at least one of said main heat transfer passage section comprises one or more substantially parallel pipes (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 61, Anderson further discloses that the main heat transfer passage section is integrated as a number of pipes in said main reaction passage section (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 63, Anderson further discloses that the pipes form symmetrical patterns including at least one of triangular, quadrangular, similar patterns, and random patterns (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 64, Anderson further discloses that the pipes are surrounded by catalytic material deposited on one or more carrier means (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 65, Anderson further discloses that the pipes comprise at least one of a circular, an oval, a triangular, a four-sided, and any similar regular or irregular cross sectional shape (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 66, Anderson further discloses that the three passage sections comprises one or more lamellar plates (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 67, Anderson further discloses that wherein said one or more lamellar plates form non-circular canals with a cross sectional shape formed by at least one of triangles,

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four sided shapes, combinations hereof, and similar shapes (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 68, Anderson further discloses that wherein indentations in a surface of said one or more lamellar plates form longitudinal or diagonal patterns (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 69, Anderson further discloses that the catalytic material is deposited on one or more carrier means in at least one of said at least three passage sections.

Regarding claim 70, Anderson further discloses that one or more carrier means are composed of at least one of metal, ceramic, glass, other heat resistant materials, and combinations thereof (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 71, Anderson further discloses that one or more carrier means include a shape which is at least one of spherical, cylindrical, quadrangular, as saddle, ring, regular, and irregular (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 73, Anderson further discloses that one or more carrier means include monoliths or fibers (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 74, Anderson further discloses that the fibers deposit with said catalytic material form a tangled bundle of fibres partly or totally filling one or more of said passage sections (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 75, Anderson further discloses that the monoliths or fibers deposit with said catalytic material form longitudinal monoliths or fibres inside one or more of said passage sections (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 76, Anderson further discloses that the main reaction passage section of said at least three passage sections comprises one or more kinds of said catalytic material deposit on said carrier means (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 77, Anderson further discloses that the one or more inlet and/or outlet passage sections of said at least three passage sections comprises one or more kinds of said catalytic material deposit on said carrier means (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 78, Anderson further discloses that the one or more of said at least three passage sections comprise combined carrier means including wall flow filters, fibres, balls and/or monoliths (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 79, Anderson further discloses that the combined carrier means are positioned in continuation of each other through one or more of said at least three passages (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 80, Anderson further discloses that the catalytic material includes metal or metal alloys from the Platinum metal group including Platinum (Pt), Palladium (Pd), Rhodium



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(Rh) and combinations hereof (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 81, Anderson further discloses that the catalytic material includes metal oxides including at least one of Gold (Au), Platinum (Pt), Silver (Ag), Aluminum (Al), Lead (Pb), Zirconium (Zr), Copper (Cu), Cobalt (Co), Nickel (Ni), Iron (Fe), Cerium (Ce), Chrome (Cr), Tin (Sn), Manganese (Mn) and Rhodium (Rh), Oxides, and combinations hereof (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 82, Anderson further discloses that the catalytic material includes combinations of metal or metal alloys from the Platinum metal group and metal oxides (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 83, Anderson further discloses that the main reaction passage section heat exchanges with said main heat transfer passage section of said at least three passage sections (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 84, Anderson further discloses that the main reaction passage section heat exchanges with said main heat transfer passage section in counterflow (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 85, Anderson further discloses that the main reaction passage section heat exchanges with one or more previous inlet and/or succeeding outlet passage sections (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 86, Anderson further discloses that the main reaction passage section heat exchanges with said one or more inlet passage sections in counterflow (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 87, Anderson further discloses that the main reaction passage section heat exchanges with said one or more outlet passage sections in concurrent flow (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 88, Anderson further discloses that at least one layer of insulation between said at least three passage sections (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 89, Anderson further discloses that the at least one layer of insulation is positioned between said main reaction passage section and one or more inlet passage sections of the at least three sections (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 92, Anderson further discloses that at least one of said passage sections comprises one or more wall flow filters with numerous porous walls allowing the fluid quantity to penetrate through the walls (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 93, Anderson further discloses combustion material is added to the device through a fuel line connected to a fuel tank and a fuel supplying means or through adding further combustion material to the fluid quantity (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 94, Anderson further discloses that the method cleans exhaust gas from an internal combustion engine (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 95, Anderson further discloses that the method regulates or controls temperature in an exothermal or endothermal chemical reaction in an industrial chemical application (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 96, Anderson further discloses that the method regulates or controls temperature in fuel cells (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 97, Anderson further discloses that the device is disposed in connection with combustion engines in vehicles fuelled by at least one of petrol, diesel, natural gas, bottled gas, and similar fuels (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 98, Anderson further discloses that the device is disposed in connection with stationary combustion engines fuelled by at least one of petrol, diesel, natural gas, bottled gas, and similar fuels (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 99, Anderson further discloses that the device is disposed in connection with an exothermal or endothermal chemical reaction in an industrial chemical application (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 100, Anderson further discloses that the device disposed in connection with fuel cells to regulate or control temperature (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

Regarding claim 101, Anderson further discloses that the wherein approximately one-third of the combined carrier means comprise said wall flow filters and a remainder of the combined carrier means comprise said fibers, balls and/or monoliths (e.g. See Figs. 1-2; page 8, lines 10-38; page 9, lines 1-25; page 16, lines 1-38; page 17, lines 1-10).

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of design choice.***

Regarding claim 62, Anderson discloses all the claimed limitation as discussed above except the number of pipes is between 20 and 1000 pipes.

Regarding the specific range of the number of pipes, it is the examiner's position that a range between 20 and 1000 pipes of the number of pipes, would have been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as mass flow rate of the fluid, as well as the size of the heat exchanger, properties of materials for making the heat exchanger, and the controlled temperature of the system. Moreover, there is

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nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. *In re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; *In re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such ranges are termed "critical" ranges, and the applicant has the burden of proving such criticality. *In re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; *In re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. *In re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; *In re Normann et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; *In re Irmischer*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

***Allowable Subject Matter***

Claims 72, 90-91 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit ***Final Formal Drawings (If Needed)*** in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Borroni-Bird et al. (Pat. No. 5,983,628), Hirao et al. (Pat. No. 6,848,501), Heed (Pat. No. 6,207,116), Ogino et al. (Pat. No. 6,167,846), and Munje et al. (Pat. No. 6,667,011) all disclose an exhaust gas purification for use with an internal combustion engine.

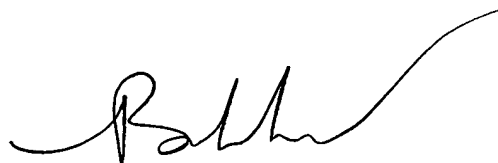
*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT  
August 04, 2006



Binh Q. Tran  
Patent Examiner  
Art Unit 3748